

WHAT IS CLAIMED IS:

1. A method of manufacturing a semiconductor device comprising:
bonding a supporting substrate to a first surface of a semiconductor wafer on which a
5 semiconductor element is formed;
back-grinding a second surface of the semiconductor wafer, the second surface being
opposite to the first surface; and
reducing a roughness of the back-ground second surface by etching the back-ground
second surface.

10 2. The method of claim 1, wherein the etching comprises a wet etching.

3. A method of manufacturing a semiconductor device comprising:
bonding a supporting substrate to a first surface of a semiconductor wafer on which a
15 semiconductor element is formed;
forming a groove in the semiconductor wafer by etching a second surface of the
semiconductor wafer, the second surface being opposite to the first surface; and
rounding a corner of the groove by etching the second surface.

20 4. The method of claim 3, wherein the etching comprises a wet etching.

5. The method of claim 2, wherein the wet etching comprises dropping an etching
solution on the back-ground second surface and spinning the semiconductor wafer to spread the
etching solution over the second surface.

25 6. The method of claim 4, wherein the wet etching comprises dropping an etching
solution on the second surface in which the groove is formed and spinning the semiconductor
wafer to spread the etching solution over the second surface.

30 7. The method of claim 5 or 6, wherein a direction of the spinning is reversed during
the wet etching.

8. The method of claim 1, wherein the wet etching comprises a chemical mechanical polishing.

5 9. The method of claim 2, 5 or 8, wherein the wet etching is performed so as to remove a foreign substance from the back-ground second surface.

10 10. The method of claim 4 or 6, wherein the wet etching is performed so as to remove a foreign substance from the groove and the second surface.

11. A method of manufacturing a semiconductor device comprising:
providing a semiconductor wafer comprising a first semiconductor element and a second semiconductor element that are formed on an insulation film formed on a first surface of the semiconductor wafer;

15 forming a first wiring for the first semiconductor element on the insulation film and a second wiring for the second semiconductor element on the insulation film so that the first and second wirings are disposed adjacent a border between the first and second semiconductor elements;

20 bonding a supporting substrate with an adhesive to the first surface so that the first and second wirings are covered with the supporting substrate;

back-grinding a second surface of the semiconductor wafer, the second surface being opposite to the first surface; and

reducing a roughness of the back-ground second surface by etching the back-ground second surface.

25 12. The method of claim 11, wherein the etching comprises a wet etching.

13. The method of claim 12, further comprising:
etching selectively the semiconductor wafer to form a groove in the semiconductor wafer
30 along the border; and
wet etching the second surface after forming the groove so as to round a corner of the

groove.

14. The method of claim 2, 4, or 11, wherein the wet etching comprises dipping the semiconductor wafer into an etching solution.

5

15. The method of claim 13, wherein at least one of the wet etchings comprises dipping the semiconductor wafer into an etching solution.

16. The method of claim 1, 3 or 11, wherein the etching comprises a dry etching.

10